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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/901,363	07/09/2001	Robert Hundt	10012768-1	5331

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HEWLETT-PACKARD COMPANY  
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P.O. Box 272400  
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EXAMINER

RAMPURIA, SATISH

ART UNIT	PAPER NUMBER
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2124

DATE MAILED: 05/06/2004

2

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/901,363

Applicant(s)

HUNDT ET AL.

Examiner

Satish S. Rampuria

Art Unit

2124

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07/09/2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                            | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

***DETAILED ACTION***

1. This action is in response to the application filed on 07/09/2001.
2. Claims 1-15 are pending.

***Claim objections***

3. Claim 3 is objected to because of the following informalities: on line 2 word "that" is appeared twice. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 6,665,671 to Coutant et al., hereinafter called Coutant.

**Per claim 1:**

Coutant discloses:

- ***A computer-implemented method for optimizing an executable program*** (col. 4, lines 64-65 "data load optimizer 140... source program, executable program") ***having a plurality of functions*** (col. 4, line 66 "comprising a set of instructions") ***and at least one function with a first name associated with executable code that implements the function at a first***

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- address* (col. 4, lines 43-46 “memory 42... include one or more... programs... comprises... listing of executable instructions for implementing logical functions”) *and at least one linkage stub code segment having code that branches to the first address* (col. 7, lines 16-18 “function B 83 within module A 81 references (address) data area DD 95 within module X 91, the function B 83 first references the linkage table 86 that was created by the linker program 54”) *and a symbolic name by which the function is invoked in the program* (col. 8, lines 66-67 “dynamic loader 120 resolves the symbolic references in the symbol table”)
- *identifying branch instructions* (col. 3, lines 18-20 “in a function call, a jump/branch instruction is used to transfer control from one point in the code to another”) *having target addresses that reference the linkage stub code segment* (col. 3, lines 24-26 “at load time with the actual address once the second load module has been loaded”)
  - *replacing the target addresses of the branch instructions with the first address* (col. 8, lines 26-26 “the data load optimizer 140 then replaces the linkage table load with the no-op instruction at step 145” see fig. 7)

**Per claim 2:**

The rejection of claim 1 is incorporated, and further, Coutant discloses:

- *replacing the target address of the branch instructions with the first address only in functions* (col. 8, lines 26-26 “the data load optimizer 140 then replaces the linkage table load with the no-op instruction at step 145” see fig. 7) *that are reached during program execution* (col. 8, lines 23-24 “if it is determined at step 144 that the global pointer relative offset is small enough to be handled”)

*Claim 15* is the apparatus claim corresponding to method claim 1 and rejected under the same rational set forth in connection with the rejection of claim 1 above.

substantially as claimed.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coutant, in view of admitted prior art.

**Per claims 3-5:**

The rejection of claim 1 is incorporated, and further, Coutant discloses:

- *searching a symbol table for an entry having a symbolic name* (col. 8, lines 1-2 “resolution of the symbolic references in the symbol table require the definitions for external references be found”) *and reading a linkage stub address* (col. 2, lines 18-19 “optimization system includes a linkage table that contains at least one unresolved data module”) *associated with the symbolic name* (col. 7, lines 66-67 “dynamic loader 120 resolves the symbolic references in the symbol table”)
- *replacing target addresses of branch instructions having target addresses equal to the linkage stub address* (col. 8, lines 26-26 “the data load optimizer 140 then replaces the

linkage table load with the no-op instruction at step 145” see fig. 7) *with an address at which the code that implements the function is stored* (col. 8, lines 16-27 “If it is determined... reference symbol... same load module... the data load optimizer 140 then replaces the linkage table load with the no-op instruction at step 145”)

Coutant does not explicitly disclose derivative or having underscore in the name.

However, admitted prior art discloses in an analogous computer system with derivative or having underscore in the name (Applicant’s specification, page 2, lines 15-17 “Certain compilers add underscores to names of external functions referenced in an application program. For example, some FORTRAN compilers add underscores to function calls in the application program in order to avoid conflict with FORTRAN "COMMON" blocks”).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the method of derivative or having underscore in the name as taught in prior art into the method of optimizing the executable program code as taught by Coutant. The modification would be obvious because of one of ordinary skill in the art would be motivated have underscore or derivative of the name at the time of execution to differentiate the function name as suggested in prior art (Applicant’s specification, page 2, lines 17-19).

8. Claims 6, 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coutant in view of US Publication No. 2002/0026633 to Koizumi et al., hereinafter called Koizumi.

**Per claims 6, 7, and 11:**

The rejection of claim 1 is incorporated, and further, Coutant does not explicitly disclose replacing function entry points in the executable program with breakpoints, whereby breakpointed functions are generated; and upon encountering a breakpoint of a breakpointed function during program execution, identifying within the breakpointed function branch instructions that target linkage stub functions.

However, Koizumi discloses in an analogous computer system replacing function entry points in the executable program with breakpoints, whereby breakpointed functions are generated (page 17, paragraph 387 “a break-point setting processing” and “Referring to FIG. 41, the statement ID number in the command is extracted” and “a flag is set which indicates that the break point has been set at the corresponding statement ID number in the correspondence table”) ; and upon encountering a breakpoint of a breakpointed function during program execution (page 17, paragraph 383 “break point setting command as inputted, a break point setting processing is executed (step 5127), while for an execution command, execution processing is performed”), identifying within the breakpointed function branch instructions that target linkage stub functions (page 17, paragraph 389 “it is checked by consulting the correspondence table whether the break point is set at the extracted address. Unless the break point is set, the processing is repeated, starting from the step 5152, while the processing comes to an end when the break point is set”). Storing of instructions would be inherent if the break point address is being extracted from the memory.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the method of setting break point as taught by Koizumi into the method of optimizing the executable program code as taught by Coutant. The modification would be obvious because of one of ordinary skill in the art would be motivated to set a break point within the code so that the translation of the code is appropriate for the target machine as suggested by Koizumi (page 2, paragraph 26 "It is therefore... translated into a machine language... appropriate... target machine... execution...").

9. Claims 8-9 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coutant, Koizumi in view of admitted prior art.

**Per claims 8-10 and 12-14:**

The rejection of claims 6, 11 is incorporated respectively, and further, Coutant discloses:

- *searching a symbol table for an entry having a symbolic name* (col. 8, lines 1-2 "resolution of the symbolic references in the symbol table require the definitions for external references be found") *and reading a linkage stub address* (col. 2, lines 18-19 "optimization system includes a linkage table that contains at least one unresolved data module") *associated with the symbolic name* (col. 7, lines 66-67 "dynamic loader 120 resolves the symbolic references in the symbol table"); and
- *replacing target addresses of branch instructions having target addresses equal to the linkage stub address* (col. 8, lines 26-26 "the data load optimizer 140 then replaces the linkage table load with the no-op instruction at step 145" see fig. 7) *with an address at which the code that implements the function is stored* (col. 8, lines 16-27 "If it is



determined... reference symbol... same load module... the data load optimizer 140 then replaces the linkage table load with the no-op instruction at step 145”)

Neither Koizumi nor Coutant explicitly disclose derivative or having underscore in the name.

However, admitted prior art discloses in an analogous computer system with derivative or having underscore in the name (Applicant’s specification, page 2, lines 15-17 “Certain compilers add underscores to names of external functions referenced in an application program. For example, some FORTRAN compilers add underscores to function calls in the application program in order to avoid conflict with FORTRAN "COMMON" blocks”).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the method of derivative or having underscore in the name as taught in prior art into the method of optimizing the executable program code as taught by Coutant. The modification would be obvious because of one of ordinary skill in the art would be motivated have underscore or derivative of the name at the time of execution to differentiate the function name as suggested in prior art (Applicant’s specification, page 2, lines 17-19).

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patent is cited to further show the state of the art with respect to optimizing executable code.

US Patent No. 5,953,534 to Romer et al.

US Patent No. 5,805,895 to Breternitz et al.

US Patent No. 6,317,870 to Mattson, Jr

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Satish S. Rampuria whose telephone number is 703-305-8891. The examiner can normally be reached on 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (703) 305-9662. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

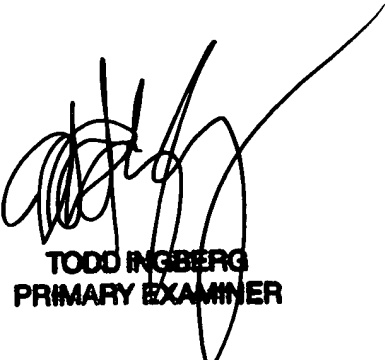
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Satish S. Rampuria

Patent Examiner

Art Unit 2124

05/03/2004



**TODD INGBERG**  
**PRIMARY EXAMINER**